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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,432	03/26/2004	Nobukata Okano	SON-2981	8124

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EXAMINER
KIM, DAVID S

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/809,432

Applicant(s)

OKANO ET AL.

Examiner

David S. Kim

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4 and 21-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4 and 21-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
3. **Claims 3, 4, 21, 24-28, 30-32, and 37-38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling et al. (WO 02/25842 A2, hereinafter "Dowling") in view of Hiramatsu (U.S. Patent No. 7,099,589 B1).

Regarding claim 3, Dowling discloses:

A communications system comprising:

a communications lighting apparatus (Fig. 5) having a first light source unit which emits illumination light (light source 132) and a second light source unit (transmitter 136) which transmits information in the form of an optical signal; and

a mobile terminal device (e.g., mobile communication devices on p. 15, l. 3-20, portable devices on p. 48, l. 19-21) which receives the optical signal emitted by the second light source.

Dowling does not expressly disclose:

wherein the second light source unit has at least two light sources which intermittently emit light beams of the same wavelength, which are independent of each other.

However, these techniques are known in the art, as shown by Hiramatsu (Example 2 on col. 12, l. 45 – col. 14, l. 45, each of the multiple light sources of the multi-beam transmitter emits an independent

light beam, all of the beams of the same wavelength, see col. 13, l. 62 - col. 14, l. 11). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include these techniques in the apparatus of Dowling. One of ordinary skill in the art would have been motivated to do this to provide the benefit of providing multiple communication channels for increased transmission rates or for communicating with multiple terminals.

Regarding claim 4, the limitations in claim 4 correspond to the limitations in claim 3. Accordingly, the corresponding limitations of claim 4 are treated with the corresponding teachings of Dowling and Hiramatsu. The difference between claim 4 and claim 3 is the limitation about the different wavelengths. Hiramatsu also teaches the use of different wavelengths (Example 1 on col. 5+, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of different wavelengths, see col. 11, l. 27-45).

Regarding claim 21, Dowling in view of Hiramatsu (as combined in the treatment of claim 4 above) discloses:

A communications system comprising:

a communications lighting apparatus (Dowling, Fig. 5) having an illumination light source adapted to emit illumination light (Dowling, light source 132) and an information-transmitting unit adapted to emit an optical signal (Dowling, transmitter 136),

wherein said information-transmitting unit has light sources, a light beam from one of said light sources being emitted independent of a light beam from another of said light sources (Hiramatsu, e.g., the independent sources of 102 in Fig. 1).

Regarding claim 24, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said information-transmitting unit is mounted on said illumination light source (Dowling, see the embodiment of Fig. 7. Notice the mounting of module 716 onto base 702 in Fig. 7. Module 716 is an output device that may emit an optical signal (p. 45, l. 17-19). Base 702 may be an illumination light source (p. 44, l. 17-21).

Regarding claim 25, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said illumination light source intermittently emits another optical signal in a predetermined pattern (Dowling, various patterns on p. 37, last paragraph).

Regarding claim 26, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein light beams from said light sources are of the same wavelength (Hiramatsu, Example 2 on col. 12, l. 45 – col. 14, l. 45, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of the same wavelength, see col. 13, l. 62 - col. 14, l. 11).

Regarding claim 27, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein light beams from said light sources are of different wavelengths (Hiramatsu, Example 1 on col. 5+, each of the multiple light sources of the multi-beam transmitter emits an independent light beam, all of the beams of different wavelengths, see col. 11, l. 27-45).

Regarding claim 28, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said information-transmitting unit includes a light source section (Dowling, transmitter 136), said light source section being adapted to emit said optical signal.

Regarding claim 30, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 29, wherein said optical signal includes said information.

However, notice that Dowling does disclose memory 150 and processor 140 in Fig. 5. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange memory 150 to store information to be included in the optical signal and to arrange processor 140 to read this information stored in memory 140. One of ordinary skill in the art would have been motivated to do this since Dowling is relatively silent about the data signal source for transmitter 136, and the combination of a memory and a processor is an extremely conventional means for providing such a data signal source for

a transmitter. That is, the data signal for transmitter 136 must originate from some source, and a memory, such as 150 in Fig. 5, is known as a common storage location for data to transmit as a signal.

Regarding claim 31, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said information-transmitting unit includes an interface (Dowling, input/output circuitry 160 in Fig. 5) and a recording section (Dowling, memory 150),

said interface being adapted to receive an input optical signal from an external device (Dowling, input/output circuitry 160 in Fig. 5).

Dowling in view of Hiramatsu does not expressly disclose:

said recording section being adapted to record said input optical signal.

However, notice that the output from input/output circuitry 160 goes to processor 140 and memory 150. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange memory 150 to record the information received by the information input section. One of ordinary skill in the art would have been motivated to do this since Dowling is relatively silent about the destination of information received by the input/output circuitry 160, and a memory is an extremely conventional means for recording such information. That is, the received information must go to some destination, and it appears that memory 150 of Dowling would be the final destination for recording the received information from input/output circuitry 160.

Regarding claim 32, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said information-transmitting unit has an emission band in the near-infrared band, the intermediate far-infrared band or a longer wavelength band (Dowling, infrared on p. 37, last paragraph).

Regarding claim 37, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said light sources emit said optical signal (Hiramatsu, e.g., the light sources of 102 in Fig. 1).

Regarding claim 38, Dowling in view of Hiramatsu discloses:

A communications system according to claim 37, further comprising:
a mobile terminal device adapted to receive said optical signal (Dowling, e.g., mobile communication devices on p. 15, l. 3-20, portable devices on p. 48, l. 19-21).

4. **Claims 22-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Brooks (U.S. Patent No. 5,218,466).

Regarding claim 22, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 21, further comprising a third light source unit adapted to emit a visible light beam.

However, such a visible light source unit is known in the art, as shown by Brooks (104 in Figs. 1 and 3). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such a visible light source unit in the apparatus of Dowling. One of ordinary skill in the art would have been motivated to do this to indicate the occurrence of an event (Brooks, abstract), which is a useful status indicator.

Regarding claim 23, Dowling in view of Hiramatsu and Brooks discloses:

A communications system according to claim 22, wherein said visible light beam indicates a region in which said optical signal emitted from said information-transmitting unit is receivable (104 in Figs. 1 and 3).

5. **Claim 29** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Newton (Newton's Telecom Dictionary, 8th ed.).

Regarding claim 29, Dowling in view of Hiramatsu discloses:

A communications system according to claim 21, wherein said information-transmitting unit includes a recording medium (Dowling, memory 150 in Fig. 5) and a reading section (Dowling, processor 140),

said reading section being adapted to read information stored in said recording medium (Dowling, notice the interaction between processor 140 and memory 150).

Dowling in view of Hiramatsu does not expressly disclose:

said recording medium being *removable* from said information-transmitting unit.

Notice that Dowling suggests that memory 150 can be any of a number of various types of memory (p. 39, last paragraph). Any suitable removable memory would be another obvious type of memory for Dowling. Various examples of removable memory are well known in the art, as exemplified by Newton ("removable media" (p. 868), "removable cartridge system" (p. 868), "floppy disk" (p. 452), and "floppy mini" (p. 453)). One of ordinary skill in the art would have been motivated to do this since removable memory is easy to replace, reprogram, and transport (e.g., Newton, the example of the "floppy disk" is easy to replace, reprogram, and transport).

6. **Claims 33 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Ramaswami et al. (*Optical Networks: A Practical Perspective*, 2nd ed., hereinafter "Ramaswami").

Regarding claim 33, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 21, wherein said information-transmitting unit has an end-plane emission semiconductor laser used as a light source.

However, this type of laser is well known in the art for providing optical sources for optical communications, e.g., a Fabry-Perot laser as shown in Ramaswami (p. 167-168). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such a laser to provide a light source of Dowling. One of ordinary skill in the art would have been motivated to do this since it is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

Regarding claim 34, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 21, wherein said information-transmitting unit has a vertical-plane emission semiconductor laser used as a light source.

However, this type of laser is well known in the art for providing optical sources for optical communications, e.g., a VCSEL as shown in Ramaswami (p. 172-174). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such a laser to provide a

light source of Dowling. One of ordinary skill in the art would have been motivated to do this since it is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

7. **Claim 35** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Service ("Hot New Beam May Zap Bandwidth Bottleneck").

Regarding claim 35, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 21, wherein said information-transmitting unit has a quantum-cascade semiconductor laser used as a light source.

However, this type of laser is well known in the art for providing optical sources for optical communications, e.g., a QCL as shown in Service (entire article). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ such a laser to provide a light source of Dowling. One of ordinary skill in the art would have been motivated to do this since it is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

8. **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Ramaswami and Service.

Regarding claim 35, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 21, wherein said information-transmitting unit is a combination of an end-plane emission semiconductor laser, a vertical-plane emission semiconductor laser, and a quantum-cascade semiconductor layer.

However, these various types of lasers are all well known in the art for providing optical sources for optical communications, e.g., a Fabry-Perot laser and a VCSEL in Ramaswami (p. 167-168, 172-174) and a QCL in Service (entire article). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ any or all of them in any combination in the information-transmitting unit of Dowling. One of ordinary skill in the art would have been motivated to do this since it

is commonly known that lasers generally provide stronger communication signals than the LEDs of Dowling (p. 37, last paragraph).

9. **Claim 39** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dowling in view of Hiramatsu as applied to the claims above, and further in view of Leeb et al. (U.S. Patent No. 6,198,230 B1, hereinafter "Leeb").

Regarding claim 39, Dowling in view of Hiramatsu does not expressly disclose:

A communications system according to claim 38, wherein said mobile terminal device is adapted to display contents of said optical signal.

However, the mobile terminal devices of Dowling include devices that conventionally comprise displays, such as cellular telephones (Dowling, p. 15, middle paragraph) and portable computers (Dowling, p. 15, last two lines). Additionally, the technique of displaying the contents of a received signal is extremely common in the art, see an example in Leeb (Fig. 10). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to arrange such displays to display the contents of the optical signal received. One of ordinary skill in the art would have been motivated to do this for any number of common reasons for displaying the contents of a received signal, such as to verify the proper reception of the received signal or to alert a user about an improper reception of the received signal.

Response to Arguments

10. Applicant's arguments, filed on 30 August 2007, with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. In particular, notice the new application of teachings from Hiramatsu.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kahn et al. ("Wireless infrared communications") is cited to show comparisons between light-emitting diodes (LED's) and laser diodes (LD's) in the environment of wireless infrared communications (Table 2 on p. 271) and to show various other teachings regarding other aspects of wireless infrared communications.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK


KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER